



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

Centrifuge Research Center

Description

Centrifuge modeling offers researchers the ability to look into the future. Long-term behaviors can be accurately simulated in a short model test time.

The U.S. Army centrifuge, located at the ERDC-Geotechnical and Structures Laboratory, provides researchers an economical approach for evaluating alternative designs, investigating complex problem areas, and validating numerical methods with instrumented physical models. The centrifuge supports research investigations in the fields of geotechnical, structural, hydraulic, environmental, physics of frozen soil and water, and coastal engineering. Studies are possible under climatic conditions ranging from desert to polar to ocean regions.

Creation of the U.S. Army Centrifuge Research Center has significantly enhanced the capabilities of researchers to address needs in physical modeling that span the full range of engineering applications. The facility is available for use by both government and non-government researchers. Further information on potential *partnering mechanisms* for application of centrifuge modeling is available upon request to the ERDC-GSL research team.

Specifications

The combination of large mass and high acceleration makes this the most powerful centrifuge in the world. The centrifuge has a radius of 6.5 meters and has been tested to its maximum payload of 8,000 kg at 143 g's acceleration, decreasing to 2,000 kg at 350 g's.

Benefits

Centrifuge modeling allows users to investigate a wide range of field problems under laboratory conditions and to generate data quickly, economically, and accurately in order to solve real-world problems.

Success Stories

The U.S. Army centrifuge was applied to investigate the long-term containment of contaminated dredged material, specifically to validate a proposed dredged material capping design. The model was subjected to a prototype time of 25 years, which took only 22 hr on the centrifuge. The information that was derived was applied by engineers and scientists to design cleanup procedures for formerly used defense sites.

Point of Contact

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